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KIRIRI WOMEN'S UNIVERSITY OF SCIENCE AND TECHNOLOGY
UNIVERSITY EXAMINATION, 2024/2025 ACADEMIC YEAR
FIRST YEAR, FIRST SEMESTER EXAMINATION
FOR THE CERTIFICATE IN COMMUNITY DEVELOPMENT AND SOCIAL WORK
CCU 004: BUSINESS CALCULATION AND STATISTICS

Date: 3RD DECEMBER 2024
Time: 11:30AM-1:30PM

INSTRUCTIONS TO CANDIDATES
ANSWER QUESTION ONE (COMPULSORY) AND ANY OTHER TWO QUESTIONS
QUESTION ONE (30 MARKS)

a. Solve the following simultaneous equation using
   i. Elimination method. (3 Marks)
   ii. Substitution method. (3 Marks)

$$4x + 2y = 16$$
$$5x - 3y = 9$$

b. The data below shows the marks of student obtained in a given test.

Marks	0-5	5-10	10-15	15-20	20-25
No of student	2	5	10	6	7

Calculate the following
   i. Mean. (2 Marks)
   ii. Median. (4 Marks)
   iii. Mode. (3 Marks)

c. Given two matrices A and B

$$A=\begin{bmatrix}7 & 8\\ 2 & 3\end{bmatrix} \quad B=\begin{bmatrix}1 & 5\\ 6 & 9\end{bmatrix}$$

Determine the following;
   i. Transpose of A. (1 Mark)
   ii. AB. (3 Marks)
   iii. B^T+A. (2 Marks)

d. Solve the following equation $4x^2 - 7x + 3 = 0$
   i. Formula. (3 Marks)
   ii. Factorization. (3 Marks)

e. A bag contains 4 white beads and 3 black beads. A man picks 2 at random. Find the probability that both beads are of same colour. (3 Marks)

QUESTION TWO (20 MARKS)

a) The following data shows the marks of student obtained in an exam

Marks	No.of student
40-50	20
50-60	25
60-70	36
70-80	72
80-90	51
90-100	40

Calculate the following

i. Mean. (3 Marks)
ii. Median. (4 Marks)
iii. Mode. (3 Marks)
iv. Standard deviation. (5 Marks)
v. coefficient of variation. (3 Marks)

b) Find the inverse of matrix A given $A = \begin{bmatrix} 5 & 3 \\ 7 & -4 \end{bmatrix}$ (2 Marks)

QUESTION THREE (20 MARKS)

a) Given two matrices A and B

A=$\begin{bmatrix} 4 & 3 \\ 1 & 5 \end{bmatrix}$ B=$\begin{bmatrix} 3 & 7 \\ 3 & 4 \end{bmatrix}$

Determine the following;

i. BA. (3 Marks)
ii. B^T+A. (2 Marks)

b) The following shows marks obtained by student in a test.

Marks	0-10	10-20	20-30	30-40	40-50	50-60
No of students	7	12	10	8	5	16

Calculate the following from the data above

i. Q_3. (3 Marks)
ii. First quartile. (3 Marks)
iii. D_4 (3 Marks)
iv. P_{30} (3 Marks)
v. D_6 (3 Marks)

QUESTION FOUR (20 MARKS)

a) Solve the following simultaneous equation by;

$$5x + 2y = 4$$
$$3x + 4y = 6$$

i. Elimination method. (4 Marks)
ii. Substitution method. (4 Marks)

b) Solve the following simultaneous equation by Matrix method. (5 Marks)

$$\boldsymbol{4a + 2b = 5}$$
$$\boldsymbol{3a + 5b = 1}$$

c) Assume you want to do a research on early pregnancy in your county, state four method you would use to collect data using primary data sources. (4 Marks)

d) Differentiate between primary data source and secondary data source. (3 Marks)

QUESTION FIVE (20 MARKS)

a. The table below shows the masses of 104 people.

Mass (kg)	0-5	5-10	10-15	15-20	20-25	25-30
No. of people	9	11	32	18	24	10

i. Draw a cumulative frequency for the data above. (4 Marks)
ii. From the graph above estimate the value of median. (3 Marks)
iii. Draw a histogram and superimpose a frequency curve. (4 Marks)
iv. From the graph above estimate the value of mode. (3 Marks)
v.

b. Solve the following equation $4x^2 - 4x - 3 = 0$

i. By formula. (3 Marks)
ii. Factorization. (3 Marks)